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EXAMINER

TAYONG, HELENE E

ART UNIT	PAPER NUMBER
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2609

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/777,631

Applicant(s)

AKITA ET AL.

Examiner

Helene Tayong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 and 29-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 and 29-40 is/are rejected.
- 7) ☒ Claim(s) 26-28 and 41-43 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/13/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 2/13/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it exceeds 150 words.

Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1-4,7-9,11-17,21,25,29,30-32,35,36-37 and 40 are rejected under 35 U.S.C. 102(e) as being anticipated by Katta et al (US 7042965 B2)

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome

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either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

(1) Regarding claim 1;

Katta et al. in figure 7 discloses an evaluation level setting method (col.2, line 25) comprising:

detecting signal levels from a training pattern corresponding to the symbols, the training pattern being such that the plurality of signal levels of the transmission signal are sent in a known variation pattern (col.9, lines 44-47);

initializing a model value of each of the plurality of signal levels to be received according to predetermined conditions, and holding the model values (col.9, lines 49-54);

repeating a process of comparing a currently detected signal level with an existing model value based on the symbols of the training pattern and updating the existing model value to a new model value obtained by increasing or decreasing the existing model value by a predetermined amount, depending on whether the currently detected signal level is greater or smaller than the existing model value (col. 9, lines 55-57); and

setting evaluation levels using the model values updated based on the symbols of the training pattern, the evaluation levels distinguishing and evaluating the plurality of signal levels of the received transmission signal (col.10, lines 15-19).

(2) Regarding claim 14;

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Katta et al. in figure 7 discloses a data reception apparatus (col. 2, lines 52-53)

comprising:

a signal level detection section for detecting, at the time of initialization, signal levels from a training pattern corresponding to the symbols, the training pattern being such that the plurality of signal levels of the transmission signal sent from the data transmission apparatus are formed in a known variation pattern (col.9, lines 44-47);

a model value storage section having a plurality of storage means for storing a model value of each of the plurality of signal levels to be received, the model values initialized according to predetermined conditions, stored in their respective storage means, and updated according to a predetermined process (col.9, lines 49-51);

a comparison and update section for repeating a process of comparing a currently detected signal level with an existing model value stored in the storage means based on the symbols of the training pattern and updating the existing model value to a new model value obtained by increasing or decreasing the existing model value by a predetermined amount, depending on whether the currently detected signal level is greater or smaller than the existing model value (col. 9, lines 55-57);

an evaluation level value arithmetic section for calculating evaluation levels using the model values updated and stored in the plurality of storage means, the evaluation levels distinguishing and evaluating the plurality of signal levels of the transmission signal received by the data reception apparatus from the data transmission apparatus (col. 10, lines 15-19); and

an evaluation level storage section for storing the evaluation levels calculated by the evaluation level value arithmetic section (col. 10, lines 20-29).

(3) Regarding claim 29;

a data transmitting section for mapping symbols of transmission data to any of a plurality of signal levels and sending a mapped electrical signal to any of the data transmission apparatuses of a subsequent data transmission apparatus (col. 3, lines 57-59);

a training pattern transmitting section for sending, at the time of initialization, a training pattern to the subsequent data transmission apparatus, the training pattern being such that the plurality of signal levels of the electrical signal are formed in a known variation pattern (col. 7, lines 26-36);

a signal level detection section for detecting signal levels from the electrical signal sent from any of the data transmission apparatuses of a previous data transmission apparatus, corresponding to the symbols, and distinguishing and evaluating the detected signal levels upon data reception (col. 7, lines 34-36);

a model value storage section having a plurality of storage means for storing, at the time of the initialization, a model value of each of the plurality of signal levels to be received, the model values initialized according to predetermined conditions, stored in their respective storage means, and updated according to a predetermined process (col. 7, lines 34-64);

a comparison and update section for repeating a process of comparing a currently detected signal level with an existing model value stored in the storage means

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based on the symbols of the training pattern and updating the existing model value to a new model value obtained by increasing or decreasing the existing model value by a predetermined amount, depending on whether the currently detected signal level is greater or smaller than the existing model value (col. 8, lines 4-9);

an evaluation level value arithmetic section for calculating evaluation levels using the model values updated and stored in the plurality of storage means, the evaluation levels being used by the signal level detection section for distinguishing and evaluating the plurality of signal levels of the electrical signal upon data reception (col. 8, lines 8-26); and

an evaluation level storage section for storing the evaluation levels calculated by the evaluation level value arithmetic section (col. 8, lines 33-36).

(4) Regarding claims 2,15 and 30;

wherein the model values which are initialized and held according to the predetermined conditions are the first signal levels detected corresponding to the symbols of the training pattern (col.9, lines 55-67 and col. 10, lines 1-14).

(5) Regarding claims 3,16 and 31;

wherein the model values which are initialized and held according to the predetermined conditions are preset fixed values(col. 9, lines 33-35).

(6) Regarding claims 4 and 32;

wherein the evaluation levels are set by taking an average between any adjacent model values updated based on the symbols of the training pattern (col. 9, lines 55-65).

(7) Regarding claims 11, 24 and 39;

the training pattern is sent with a predetermined header after a lock signal has been sent, the lock signal including a clock component for establishing synchronization with a transmitting end (col. 7, lines 33-35); the plurality of signal levels are divided into an upper group including relatively high signal levels and a lower group including relatively low signal levels (col. 7, lines 39-41); the training pattern and the lock signal are such that any of the signal levels selected from the upper group and any of the signal levels selected from the lower group are mapped alternately (col. 8, lines 3-5-9); and the header is such that adjacent symbols are mapped to the same signal level (col. 8, lines 4-36).

(8) Regarding claim 12;

at the time of the initialization: establishing synchronization with the transmitting end by recovering the clock component of the lock signal (col. 9, lines 29-31); and detecting the header by detecting, among the signal levels after synchronization is established, adjacent signal levels which are identical to each other col. 9, lines 36-44).

(9) Regarding claim 13;

the training pattern is sent for a predetermined period of time from when the header is sent out; and the repetition of update of the model values ends when the predetermined period of time from a reception of the header has elapsed (col. 7, lines 42-46).

(10) Regarding claim 17;

wherein the evaluation level value arithmetic section calculates the evaluation levels by taking an average between any adjacent model values updated and stored in the plurality of storage means (col. 10, lines 15-25).

(11) Regarding claims 25 and 40;

a conversion section for converting the transmission signal received into a digital signal (col. 6, lines 23-25);

a filter for shaping a waveform by removing noise from the digital signal converted in the conversion section (col. 6, lines 24-25);

a clock recovery section for establishing synchronization with the data transmission apparatus by recovering the clock component of the lock signal converted into a digital signal in the conversion section (col. 7, lines 34-36); and

a reverse mapping section, wherein: the signal level detection section further outputs, in accordance with clocks whose synchronization is established by the clock recovery section, results of distinguishing and evaluating a plurality of signal levels of the digital signal using the evaluation levels stored in the evaluation level storage section (col. 7, lines 65-67); and

the reverse mapping section decodes the symbols of received data which is sent as the transmission signal, by performing a reverse mapping on the evaluation results outputted by the signal level detection section (col. 8, lines 1-2).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5,6,7,8,9,18, 19,20,21,22,33,34,35,36 and 37 are rejected under 35

U.S.C. 103(a) as being unpatentable over Katta et al. (US 7042965 B2) in view of Goto et al (US 5052021).

(1) Regarding claims 5,18 and 33;

Katta et al discloses subject matter disclosed above but fails to teach wherein: as a result of the comparison of the currently detected signal level against the existing model value based on the symbols of the training pattern, if the currently detected signal level is greater than the existing model value, the existing model value is updated to a new model value obtained by adding a predetermined amount to the existing model value; and if the currently detected signal level is smaller than the existing model value, the existing model value is updated to a new model value obtained by subtracting a predetermined amount from the existing model value.

However, Goto et al in the same field of endeavor, teaches wherein: as a result of the comparison of the currently detected signal level against the existing model value based on the symbols of the training pattern, if the currently detected signal level is greater than the existing model value, the existing model value is updated to a new model value obtained by adding a predetermined amount to the existing model value; and if the currently detected signal level is smaller than the existing model value, the existing model value is updated to a new model value obtained by subtracting a predetermined amount from the existing model value (col.12, lines 5-20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teaching of Goto et al. into method of Katta et al. in order to improve the receiver's signal to noise performance. The motivation to implement the teaching of Goto et al to the method of Katta et al. would be to provide high-quality decoding free from errors (col. 2, lines 1-2).

(2) Regarding claims 6, 19 and 34;

Katta et al discloses subject matter disclosed above but fails to teach wherein the predetermined amount is set to a value which is always equal to or smaller than a difference obtained from the comparison (col.11, lines 57-62).

However, Goto et al in the same field of endeavor, teaches wherein the predetermined amount is set to a value which is always equal to or smaller than a difference obtained from the comparison (col.11, lines 57-62).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teaching of Goto et al. into method of Katta et al. in order to improve the receiver's signal to noise performance. The motivation to implement the teaching of Goto et al to the method of Katta et al. would be to provide a digital signal decoding circuit which can eliminate an influence of a change in signal value of a received digital signal even if the signal value of the receiver digital signal is temporarily and abruptly changed due to noise components (col. 1, lines 37-40).

(3) Regarding claims 7, 20 and 35;

Katta et al discloses subject matter disclosed above but fails to teach wherein: as a result of the comparison of the currently detected signal level against the existing

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model value based on the symbols of the training pattern, if the currently detected signal level is greater than the existing model value, the existing model value is updated to a new model value obtained by adding to the existing model value an amount which is equal to or smaller than the difference and which is weighted according to the difference; and if the currently detected signal level is smaller than the existing model value, the existing model value is updated to a new model value obtained by subtracting from the existing model value an amount which is equal to or smaller than the difference and which is weighted according to the difference.

However, Goto et al in the same field of endeavor, teaches wherein: as a result of the comparison of the currently detected signal level against the existing model value based on the symbols of the training pattern, if the currently detected signal level is greater than the existing model value, the existing model value is updated to a new model value obtained by adding to the existing model value an amount which is equal to or smaller than the difference and which is weighted according to the difference(col. 12, lines 21-27).; and if the currently detected signal level is smaller than the existing model value, the existing model value is updated to a new model value obtained by subtracting from the existing model value an amount which is equal to or smaller than the difference and which is weighted according to the difference (col. 12, lines 27-39).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teaching of Goto et al. into method of Katta et al. in order to improve the receiver's signal to noise performance. The motivation to implement the teaching of Goto et al to the method of Katta et al. would be to provide a

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digital signal decoding circuit which can accurately decode a received digital signal without being influenced by a change in DC level of the received digital signal. (col. 1, lines 32-35).

(4) with regards to claims 8, 21 and 36;

Katta et al discloses subject matter disclosed above but fails to teach wherein the signal level detection section detects the plurality of signal levels by calculating a difference in signal level between any of the symbols and a previous symbol ; and the evaluation levels are set for distinguishing and evaluating the plurality of signal levels corresponding to the symbols of the transmission signal sent from the previous data transmission apparatus upon data reception, based on a difference in signal level between any of the symbols and a previous symbol.

However, Goto et al in the same field of endeavor, teach wherein the signal level detection section detects the plurality of signal levels by calculating a difference in signal level between any of the symbols and a previous symbol (col. 4, lines 1-7); and the evaluation levels are set for distinguishing and evaluating the plurality of signal levels corresponding to the symbols of the transmission signal sent from the previous data transmission apparatus upon data reception, based on a difference in signal level between any of the symbols and a previous symbol (col. 4, lines 1-10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teaching of Goto et al. into method of Katta et al. in order to improve the receiver's signal to noise performance. The motivation to

implement the teaching of Goto et al to the method of Katta et al. would be to provide a high-quality decoding free from errors.

(5) with regards to claims 9, 22 and 37

Katta et al discloses subject matter disclosed above but fails to teach wherein the signal level detection section outputs, upon the data reception, evaluation results using the evaluation levels stored in the evaluation level storage section.

However, Goto et al in the same field of endeavor, teach wherein the signal level detection section outputs, upon the data reception, evaluation results using the evaluation levels stored in the evaluation level storage section (fig. 7, 170, col. 8, lines 21-28).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teaching of Goto et al. into method of Katta et al. in order to improve the receiver's signal to noise performance. The motivation to implement the teaching of Goto et al to the method of Katta et al. would be to provide a high-quality decoding free from errors.

6. Claims 10, 23 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katta et al. and Goto et al. as applied to claims 9,22 and 37 above and further in view of Becker et al (US 2002/0110132 A1).

(1) with regards to claims 10, 23 and 38;

Katta et al as modified by Goto et al. discloses subject matter disclosed above but fails to teach wherein data to be transmitted and received is a signal having a data format defined by MOST (Media Oriented Systems Transport).

However, Becker et al in the same field of endeavor, teaches wherein data to be transmitted and received is a signal having a data format defined by MOST (Media Oriented Systems Transport). (fig.1, [0010], lines 1-5) in order to ensure all the data is being transmitted from the source to the right destination.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the data format defined by MOST (Media Oriented Systems Transport) of Becker et al.'s to the apparatus of Katta et al. as modified by Goto et al. to check for errors during transmission. The motivation to combine Becker et al's data format defined by MOST (Media Oriented Systems Transport) to the apparatus of Katta et al as modified by Goto et al. was to reduce interference of signals.

Allowable Subject Matter

7. Claims 26, 27, 28, 41, 42 and 43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

Claim 26 is allowable since the prior art of record does not teach or suggest a header detection section for detecting, at the time of the initialization, the header by detecting, among the signal levels of the digital signal after synchronization is established by the clock recovery section, adjacent signal levels which are identical to each other; and a teacher signal generation section for outputting a teacher signal to the comparison and update section based on timing at which the header is detected by the

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header detection section and clock timing at which synchronization is established by the clock recovery section, the teacher signal designating any of the storage means to be updated by the comparison and update section.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ogura et al (US 2003/0174787 A1) discloses a signal level detector to detect the level of I-bit digital signal

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helene Tayong whose telephone number is 571-270-1675. The examiner can normally be reached on Monday-Friday 7:30 am to 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lui Shuwang can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Helene Tayong

4/13/07



SHUWANG LIU
SUPERVISORY PATENT EXAMINER